

WHAT IS CLAIMED IS:

1. A method for treating sewage in a combined sewer system where wastewater and rainwater collected flow together as sewage, comprising a step of treating the sewage with an electrochemically produced hypohalogenous acid, ozone or activated oxygen.

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10 2. The method for treating sewage in the combined sewer system according to claim 1, wherein electrolytic water containing an electrochemically produced hypohalogenous acid, ozone or activated oxygen is mixed with the sewage.

15 3. The method for treating sewage in the combined sewer system according to claim 1 or 2, wherein the sewage is treated with a hypohalogenous acid, ozone or activated oxygen electrochemically produced therein.

20 4. The method for treating sewage in the combined sewer system according to claim 3, wherein part or all of the sewage is held for a while, electrochemically treated to produce a hypohalogenous acid, ozone or activated oxygen, and then discharged into the sewer system.

25 5. The method for treating sewage in the combined sewer system according to claim 4, wherein the sewage stored for a while is rainwater stored in a rainwater-reservoir system.

6. The method for treating sewage in the combined sewer system according to claim 3, wherein the sewage in the sewer system is treated with a hypohalogenous acid, ozone or activated oxygen electrochemically produced therein, and part 5 or all of the treated sewage is stored for a while and discharged into the sewer system.

7. The method for treating sewage in the combined sewer system according to claim 6, wherein the sewage stored for a 10 while is electrochemically treated to produce a hypohalogenous acid, ozone or activated oxygen therein, and then discharged into the upstream of the sewer system.

8. The method for treating sewage in the combined sewer system according to claim 3, 4, 5, 6 or 7, wherein the sewage 15 is treated with a hypohalogenous acid, ozone or activated oxygen electrochemically produced therein at a pump station which pumps up the sewage flowing downward from the upstream of the sewer system up to the vicinity of the earth surface 20 by a pump.

9. The method for treating sewage in the combined sewer system according to claim 3, 4, 5, 6, 7 or 8, wherein the sewage is treated with a hypohalogenous acid, ozone or activated oxygen electrochemically produced therein at an 25 overflow water passage provided in the sewer system to directly discharge the sewage as the combined sewer overflow

flowing under an abnormal condition into a river, sea or the like, when the water level rises abnormally.

5 10. The method for treating sewage in the combined sewer system according to 1, 2, 3, 4, 5, 6, 7, 8 or 9, wherein a halide or halide ion is added thereto for the electrochemical treatment.

10 11. The method for treating sewage in the combined sewer system according to 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10, wherein seawater is added thereto in the electrochemical treatment.

15 12. The method for treating sewage in the combined sewer system according to 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or 11, wherein the sewage is adjusted at a pH of 7 or less.

20 13. A sewage treatment system in a combined sewer system where wastewater and rainwater collected flow together as sewage, comprising a treating means which electrochemically produces a hypohalogenous acid, ozone or activated oxygen with which the sewage is treated.

25 14. The sewage treatment system in the combined sewer system according to claim 13, wherein the treating means mixes electrolytic water containing an electrochemically produced hypohalogenous acid, ozone or activated oxygen with the sewage.

15. The sewage treatment system in the combined sewer system according to claim 13 or 14, wherein the treating means electrochemically treats the sewage to produce a
5 hypohalogenous acid, ozone or activated oxygen therein.

16. The sewage treatment system in the combined sewer system according to claim 15 which comprises a reservoir which holds part or all of the sewage for a while, wherein
10 the treating means electrochemically treats the sewage held in the reservoir to produce a hypohalogenous acid, ozone or activated oxygen therein, and discharges the treated sewage into the sewer system.

15 17. The sewage treatment system in the combined sewer system according to claim 16, wherein the reservoir is a rainwater-reservoir which holds rainwater.

18. The sewage treatment system in the combined sewer system according to claim 16, wherein the reservoir is
20 composed of an auxiliary chamber which is an expanded part of the sewer pipe for the sewer system.

19. The sewage treatment system in the combined sewer system according to claim 18, wherein a filter is provided
25 between the sewer pipe and auxiliary chamber.

20. The sewage treatment system in the combined sewer system according to claim 15, wherein the treating means electrochemically treats the sewage flowing in the sewer pipe to produce a hypohalogenous acid, ozone or activated oxygen 5 therein, and in a latter stage of the treating means, there is provided a reservoir which stores part or all of the sewage flowing in the sewer pipe for a while and discharges the treated sewage into the sewer system.

10 21. The sewage treatment system in the combined sewer system according to claim 20, wherein the treating means electrochemically treats the sewage stored in the reservoir to produce a hypohalogenous acid, ozone or activated oxygen 15 therein, and discharges the treated sewage into the upstream of the sewer system.

22. The sewage treatment system in the combined sewer system according to claim 21, wherein the reservoir is composed of a storing chamber for storing the sewage and an 20 electrolysis chamber for electrochemically treating the sewage in the reservoir.

23. The sewage treatment system in the combined sewer system according to claim 15, 16, 17, 18, 19, 20, 21 or 22, 25 wherein the treating means also electrochemically treats the sewage to produce a hypohalogenous acid, ozone or activated oxygen therein at a pump station which pumps up the sewage

flowing downward from the upstream of the sewer system up to the vicinity of the earth surface by a pump.

24. The sewage treatment system in the combined sewer system according to claim 15, 16, 17, 18, 19, 20, 21, 22 or 23, wherein the treating means electrochemically treats the sewage to produce a hypohalogenous acid, ozone or activated oxygen therein at an overflow water passage provided in the sewer system to directly discharge the sewage as the combined sewer overflow flowing under an abnormal condition into a river, sea or the like, when the water level rises abnormally.

25. The sewage treatment system in the combined sewer system according to claim 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 or 24, wherein the treating means is provided with means for adding a halide or halide ion to the electrochemically treated sewage.

26. The sewage treatment system in the combined sewer system according to claim 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 or 25, wherein the treating means is provided with means for adding seawater to the electrochemically treated sewage.

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27. The sewage treatment system in the combined sewer system according to claim 13, 14, 15, 16, 17, 18, 19, 20, 21,

22, 23, 24, 25 or 26, wherein the treating means is provided with pH-adjusting means for adjusting the electrochemically treated water at a pH of 7 or less.

5 28. The sewage treatment system in the combined sewer system according to claim 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26 or 27, wherein the treating means is provided with electrodes for electrolysis, the electrodes being of bi-polar type.

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29. The sewage treatment system in the combined sewer system according to claim 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27 or 28, wherein the treating means is provided with electrodes for electrolysis, each electrode being composed of a noble metal or conductor coated with the noble metal, carbon-based conductor or conductor coated with the carbon-based conductor, ceramic-based conductor or conductor coated with the ceramic-based conductor, or iron-based alloy or conductor coated with the iron-based alloy.

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20 30. The sewage treatment system in the combined sewer system according to claim 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28 or 29, wherein the treating means is provided with a discharged water quantity sensor which senses a quantity of the sewage discharged from the discharge port at an overflow water passage provided in the sewer system to directly discharge the sewage as the combined sewer

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overflow flowing under an abnormal condition into a river, sea or the like, when the water level rises abnormally;

a water quality sensor which senses quality of the sewage discharged from the discharge port;

5 electrodes for electrolysis; and

a controller which controls current or/and voltage for electrolysis to be applied to the electrodes for electrolysis, based on externally supplied rainfall data, discharged quantity data read by the discharged water 10 quantity sensor and water quality data read by the water quality sensor.

31. The sewage treatment system in the combined sewer system according to claim 30, wherein the sewer system is 15 composed of two or more lines,

each sewer system line being provided with a discharged water quantity sensor, water quality sensor and electrodes for electrolysis; and

the controller is also provided to control current or/and 20 voltage for electrolysis to be applied to the electrodes for electrolysis, based on externally supplied rainfall data, discharged quantity data read by each discharged water quantity sensor and water quality data read by each water quality sensor.

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32. The sewage treatment system in the combined sewer system according to claim 30 or 31, wherein the controller

transmits data from a portable terminal to a server, which treats the data by comparing them with meteorological data, and transmits necessary control signals selected from the past and present data and anticipated weather condition
5 changes back to the portable terminal, to control current or/and voltage for electrolysis to be applied to the electrodes for electrolysis.